Flight Dynamics Computer Lab

D-SIX FLIGHT DYNAMICS SIMULATOR

The engineer is using the external control stick module to drive the D-Six simulation package developed by the Bihrle Applied Research Labs. She is viewing the graphical picture of the F-18 configuration (it can also show the HUD display for the pilots view) while the second engineer is viewing one of the engineering display screens that is provided in the D-Six. The simulation workstation is running off of a PC based system located in the Flight Dynamics Computer Lab (FDCL).

The D-Six simulation workstation is used to support the analysis of the F-18E/F EMD flight testing program and any aerodynamics database and control law changes in the future. The workstation is configured with analysis tools as well as a highly detailed graphical interface. The system is capable of operating in a complete simulation mode with high fidelity graphics as well as a portable engineering mode for remote analysis. This workstation is set up to support fixed wing flying qualities analysis.

Examples of the simulation's general capabilities are: Real time operations with a nonlinear aerodynamic database; ability to import flight test data and drive the simulation in several different modes in order to evaluate the simulation's response versus flight test; and ability to drive all graphical viewpoints with flight test data. Examples of the simulation's specific capabilities for the F-18E/F EMD flight testing effort are: the importation and implementation of the Boeing F-18E/F aerodynamic database; the importation and implementation of the Boeing F-18E/F flight control system.

The D-Six workstation currently is tasked for the support of the F-18E/F flight tests but can be configured in the future to support other aircraft platforms. Studies such as "F/18-E/F Spin Sensitivity Simulation with Variable Dynamic Derivatives" and the "F-18E Flight Test & Evaluation Issues/Observations" used the D-Six simulation package for their analysis of F-18 flight issues.

For more information contact the Flight Dynamics Branch at the Naval Air Warfare Center Aircraft Division at Patuxent River, MD at 301-342-0282.